

# The Role of Plant Agricultural Practices on Development of Antimicrobial Resistant Fungi Affecting Human Health

## A Workshop

TUESDAY, JUNE 21, 2022 - Virtual (all times in EDT)

Bridging the Two Worlds: Fungal Pathogens in Plant and Human Health	
10:00 AM–10:10 AM	<p>Welcome Remarks, Workshop Overview, and Goals  <b>Paige Waterman</b>, Uniformed Services University of Health Sciences  <i>Workshop co-chair</i></p>
10:10 AM–11:05 AM	<p>Opening Panel  <b>Tom Chiller</b>, U.S. Centers for Disease Control and Prevention  <i>Moderator</i></p> <p>Antifungal drug uses in human medicine  <b>Arturo Casadevall</b>, Johns Hopkins University Bloomberg School of Public Health</p> <p>Fungicide uses in plant agriculture  <b>Tony Dorn</b>, U.S. Department of Agriculture</p> <p>Quadripartite Alliance joint activities on antimicrobial resistance (AMR)  <b>Tim Corrigan</b>, World Health Organization</p>
11:05 AM–11:20 AM	Break
11:20 AM–12:35 PM	<p>Fungal Diseases, Antifungal Resistance, and Human Health  <b>Tom Chiller</b>, U.S. Centers for Disease Control and Prevention  <i>Moderator</i></p> <p>Impact of invasive fungal diseases and antifungal drug resistance on human health  <b>Andrej Spec</b>, Washington University at St. Louis</p> <p>Overview of aspergillosis and mechanisms of antifungal drug resistance  <b>David Denning</b>, Global Action For Fungal Infections</p> <p>Overview of drug-resistant, invasive <i>Candida</i> infections  <b>Brendan Jackson</b>, U.S. Centers for Disease Control and Prevention</p>

	<p>Current research in understanding pathogenesis and host immunity toward developing treatment options  <b>Michail Lionakis</b>, National Institute of Allergy and Infectious Diseases</p>
12:35 PM–1:15 PM	<p><b>Fungicide Resistance in Plant Protection Use</b>  <b>Marin Talbot Brewer</b>, University of Georgia  <i>Moderator</i></p> <p>Genetics and mechanisms of fungicide resistance  <b>Matthew Fisher</b>, Imperial College London</p> <p>Azole-resistant <i>Aspergillus fumigatus</i> in agronomic settings: hotspots and coldspots  <b>Kevin Doughty</b>, CropLife International</p>
1:15 PM–1:55 PM	Discussion
1:55 PM–2:00 PM	Summary and Adjourn
END OF DAY 1	

WEDNESDAY, JUNE 22, 2022 - Virtual (all times in EDT)

Effects of Fungicide Use in Plants on Humans and the Environment	
10:00 AM–10:05 AM	<p>Welcome Remarks, Review of Day 1  <b>Jeff Lejeune</b>, Food and Agriculture Organization of the United Nations</p>
10:05 AM–10:45 AM	<p>Role of Fungicide Use in Food Safety and Security  <b>Phil Taylor</b>, Centre for Agriculture and Bioscience International (CABI)  <i>Moderator</i></p> <p>Case examples to illustrate (1) the role of azole fungicides in safeguarding food safety and security, and (2) potential drivers of fungicide use in the US</p> <p><b>Tim Brenneman</b>, University of Georgia  <b>Pierce Paul</b>, The Ohio State University</p>
10:45 AM–12:15 PM	<p>Dimensions of Fungicide Regulations, Use Management, and Risk Assessment  <b>Lynn Goldman</b>, George Washington University Milken Institute School of Public Health  <i>Moderator</i></p> <p>Documentation of azole fungicide use in plants in low- and middle-income countries  <b>Phil Taylor</b>, Centre for Agriculture and Bioscience International (CABI)</p> <p>Registration and health threats assessment of fungicides  <b>Nathan Mellor</b>, US Environmental Protection Agency  <b>Magdalini Sachana</b>, Organisation for Economic Co-operation and Development</p> <p>Occupational exposure to environmental resistant fungi and possible implications in human health  <b>Raquel Sabino</b>, Portuguese National Institute of Health Dr. Ricardo Jorge, Lisbon School of Medicine</p>
12:15 PM–12:30 PM	Break
12:30 PM–1:15 PM	<p>Innovations in Antimicrobial Resistance Surveillance Tools and Technologies  <b>Jeff Lejeune</b>, Food and Agriculture Organization of the United Nations  <i>Moderator</i></p> <p><i>Aspergillus fumigatus</i> azole resistance survey by air sampling through a citizen science approach  <b>Wieland Meyer</b>, Curtin Medical School, Curtin University</p> <p>Innovation in data collection tools for surveillance and mitigation: crop and environment simulation tools  <b>Brian Bailey</b>, University of California, Davis</p>

	Sampling strategies, interpretation of sampling outcomes, and evaluation of surveillance and management technologies <b>Karen Garrett</b> , University of Florida
1:15 PM–1:55 PM	Discussion
1:55 PM–2:00 PM	Summary and Adjourn
END OF DAY 2	

MONDAY, JUNE 27, 2022 - National Academy of Sciences (2101 Constitution Ave NW, Washington, DC 20037)

Mitigation Strategies for Fungicide/Antifungal Resistance	
8:00 AM–10:00 AM	In-Person Networking and Breakfast
10:00 AM–10:15 AM	Welcome virtual attendees; Review of workshop thus far <b>Paige Waterman</b> , Uniformed Services University of Health Sciences <i>workshop co-chair</i>
10:15 AM–11:45 AM	<p>One Health Approach to Antimicrobial Resistance (AMR) and Pathogen Surveillance <b>Maryn McKenna</b>, Wired <i>Moderator</i></p> <p>The necessity and benefits of taking a One Health approach in AMR surveillance and mitigation measures <b>Paul Verweij</b>, Radboud University <b>Bas Zwaan</b>, Wageningen University</p> <p>Genomic surveillance and epidemiology <b>Marin Talbot Brewer</b>, University of Georgia</p> <p>Diagnostics, resistance testing, and surveillance capabilities in local and national levels: health care systems <b>Shawn Lockhart</b>, U.S. Centers for Disease Control and Prevention</p> <p>One Health approach to AMR and pathogen surveillance at the international level <b>Jorge Pinto Ferreira</b>, Food and Agriculture Organization of the United Nations</p>
11:45 AM–12:30 PM	<p>Antifungal Drug Development and Stewardship in Health Care <b>Maryn McKenna</b>, Wired <i>Moderator</i></p> <p>New antifungal drugs in development with different modes of action <b>David Andes</b>, University of Wisconsin</p> <p>Incentives and market for drug development and global access <b>John Rex</b>, F2G</p>
12:30 PM–1:00 PM	Break

1:00 PM–1:50 PM	<p><b>Integrated Disease Management</b>  <b>Tim Widmer</b>, U.S. Department of Agriculture  <i>Moderator</i></p> <p>Precision application technologies and communication with growers and other stakeholders  <b>Melanie Ivey</b>, The Ohio State University</p> <p>Current research toward targeted approaches and considering localized risk factors  <b>Walt Mahaffee</b>, U.S. Department of Agriculture</p> <p>Mitigation measures in compost “hot spots”  <b>Jianhua Zhang</b>, National Institute for Public Health and the Environment</p>
1:50 PM–2:00 PM	Summary of Workshop
2:30 PM–4:30 PM	Poster and Networking Session
END OF WORKSHOP	